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Environmental
Protection Agency

Division of Laboratories
2200 Churchill Road
Springfield, Illinois 62794-9276

August 1992

Division of Laboratories

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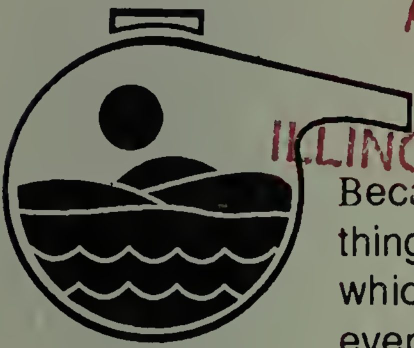

Because there are many things in the environment which can be dangerous or even deadly to people, plants and animals, it is important to be able to detect and accurately measure these substances.

Within the Illinois Environmental Protection Agency, this essential monitoring is done by the Agency's Division of Laboratories. Samples collected by, or submitted to, the Bureaus of Land, Air and Water, are analyzed and the results are then used to evaluate permit applications and facility compliance, assess ambient environmental problems, gauge the effectiveness of control actions and the adequacy of operations, as well as regulating the maintenance of pollution control equipment, monitoring the quality and changes in the waters of the state, and determining the most appropriate actions to take in an emergency.

Laboratories in Champaign, Chicago, and Springfield perform complex tests to measure the amounts of metals (such as lead and copper) and pesticides (for instance, Atrazine and DDT) in soil, water and air samples. A second Springfield laboratory uses aquatic organisms and bacteria to test the combined effects, or toxicity, of all chemicals in a sample.

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All the laboratory facilities use automated analytical instrumentation that feeds test data to the Division's Laboratories Information Management System (LIMS). The LIMS enables data to be transferred directly from the laboratory to IEPA bureau personnel.

NEARLY ONE MILLION ANALYSES A YEAR

Each year, nearly one million analyses of air, land and water samples are performed by the Division's specialized staff, using highly sophisticated tools to test specific chemicals and metals in amounts as small as parts per million and/or parts per billion. (For comparison, one part per billion is equal to one cent in $10 million.)

Because demands on the IEPA laboratory services are continually expanding, a concerted effort has been made in recent years to replace outdated equipment and expand analytical capacity. As a result of this effort, the organic laboratory's output rose from 49,986 analyses in Fiscal Year '82 to 396,986 analyses in FY '92, a 794% increase in 11 years. In the same time, the capacity of the inorganic laboratories increased 13%, from 527,834 to 596,696. (See graph)

Even more organic and inorganic analyses will be required in the next few years as more requirements under the Safe Drinking Water Act and Clean Air Act Amendments take effect. Expansion of hazardous material programs such as the federal Leaking Underground Storage Tank (LUST) program and various preremedial programs will also contribute to demands for additional testing.

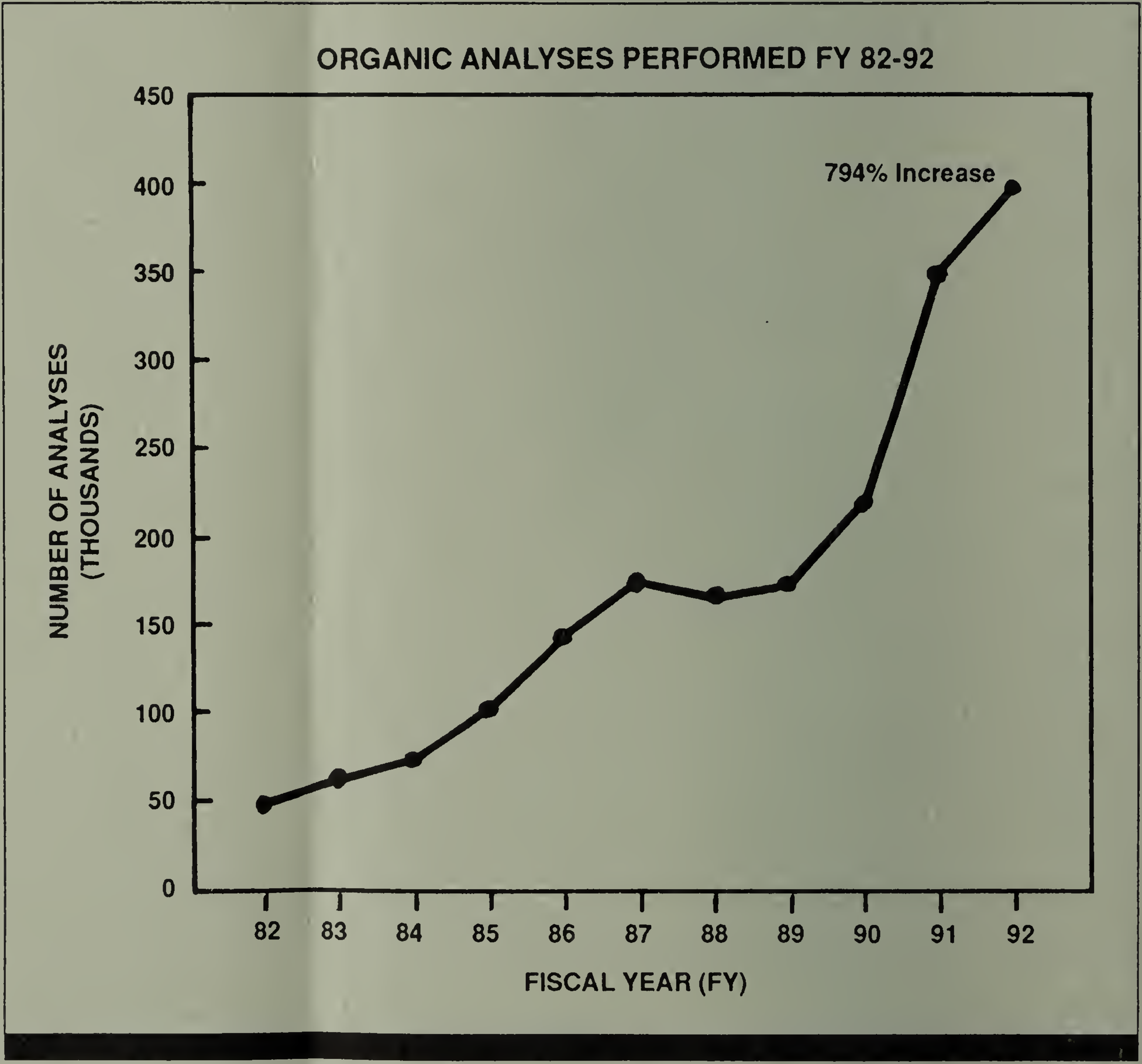
PROGRAMS SUPPORTED

At some point, the majority of programs administered by the IEPA require support from the Division of Laboratories. Among the programs which are supported by laboratory efforts are:

Safe Drinking Water Act (SDWA)

The federal SDWA sets national primary drinking water regulations which

1) cover public water systems,



2) specify contaminants that may have adverse health effects,
3) establish maximum contaminant levels or treatment techniques, and
4) establish public notification requirements.

Clean Air Act (CAA)

The CAA is the regulatory vehicle that determines and monitors airborne pollution hazardous to public health or natural resources. The U.S. EPA sets national ambient air-quality standards, with enforcement and issuance of discharge permits carried out by the states.

Clean Water Act (CWA)

The federal CWA regulates discharge of nontoxic and toxic pollutants into surface waters, with the ultimate goal of eliminating all discharges into such waters. Its interim goal is to make sure waters are usable for fishing, swimming, etc.

Resource Conservation and Recovery Act (RCRA)

RCRA's major focus is control of hazardous waste disposal, but the program deals with all stages in the waste management cycle including waste generation, storage, transport and disposal of hazardous wastes.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

CERCLA provides for identification and cleanup of hazardous materials released onto land and into the air, waterways and groundwater, including both new releases and older problems from leaking or abandoned sites.

Superfund Amendments and Reauthorization Act (SARA)

SARA provides citizens and local governments with information about potential chemical hazards in their communities, and requires facilities storing hazardous materials to provide data on the types and amounts of hazardous materials, and their specific locations.

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Additional Bureau of Land Programs:

- Criminal Investigations
- State Funded Immediate Removal program
- State Cleanup program
- Voluntary Cleanup program
- Deep Well Disposal Facilities spot checks
- Leaking Underground Storage Tanks (LUST) program

Additional Bureau of Water Programs:

- Groundwater monitoring
- Water Quality Management program
- Fish Contaminant Monitoring program
- Pesticide Monitoring Sub-network
- Industrial Solvents Sub-network
- Intensive River Basin surveys
- Ambient Lakes monitoring

LABORATORY LOCATIONS

Location: Champaign
2127 South First Street
217/333-6907

Type: Inorganic chemistry and microbiology laboratory
Substances tested for: Metals, other inorganic compounds, and coliforms
Equipment used: Inductively coupled argon plasma emissions spectrophotometers (ICP), atomic absorption spectrophotometers (AA), technicon autoanalyzers

Location: Chicago
2121 West Taylor Street
312/793-4770

Type: Inorganic chemistry and microbiology laboratory
Substances tested for: Metals, other inorganic compounds, and coliforms
Equipment used: Inductively coupled argon plasma emissions spectrophotometer (ICP), atomic absorption spectrophotometers (AA), technicon autoanalyzers

Location: Springfield
825 North Rutledge
217/782-9780

Type: Organic chemistry laboratory
Substances tested for: Pesticides, herbicides, PCBs, synthetic organic chemicals, volatile organic chemicals and other toxic organic materials
Equipment used: Gas chromatographs (GCs), gas chromatograph/mass spectrometers (GC/MSs), high pressure liquid chromatographs (HPLCs)

Location: Springfield
2200 Churchill Road
217/782-8700

Type: Ecotoxicology laboratory
Substances tested for: Inorganic and organic compounds
Equipment/test method: Bioassay analyses to assess the toxicity impacts and human health hazards of complex environmental mixtures. Bioassays complement chemical specific analyses by assessing the additive, synergistic and antagonistic effects of all chemicals/compounds in a sample.

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